



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Trung T. Doan, et al.

Serial No.: 10/774,762

Filed: February 9, 2004

For: APPROACH TO AVOID
BUCKLING BPSG BY AN
INTERMEDIATE BARRIER
LAYER

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Group Art Unit: 2822

Examiner: Novacek, Christy L.

Atty. Docket: MCRO:144-3/FLE
92-0321.04

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June 19, 2006
Date


Michael G. Fletcher

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Dear Sir:

In accordance with the OG Notice of July 12, 2005, Appellants respectfully submit this Pre-Appeal Brief Request for Review. This Request is being filed concurrently with a Notice of Appeal.

In the Final Office Action mailed on March 17, 2006, the Examiner rejected claims 19-42, all of which are currently pending. Appellants respectfully traverse this rejection in view of the clear legal and factual deficiencies discussed in detail below.

Rejections under 35 U.S.C. § 102

The Examiner rejected claims 19-38 under 35 U.S.C. § 102 as being anticipated by Woo et al. (US 5,262,352). Appellants respectfully traverse this rejection.

In the Response and Amendment filed on December 19, 2005 (hereinafter “the Response”), Appellants explained that the Woo reference does not teach or suggest a “planarization layer,” as recited by claims 19 and 33. *See* the Response, pages 11-12. In response, the Examiner stated “[c]laims 19 and 33 do not recite that the first and second layers planarize the film stack. Additionally, Woo shows that the first and second layers are planar (see Figures 1-4).” Final Office Action, page 8.

Appellants note that claims 19 and 33 recite a “*planarization* layer.” Emphasis added. For a reference to anticipate under Section 102, the prior art reference must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). The term “planarization” clearly modifies the word layer. While the Examiner has identified a number of layers in the Woo reference, the Woo reference does not teach that layers 14, 15, 17, 18, or 20 are “*planarization* layers.”

Further, Appellants stress that Figs. 1-4 of the Woo reference do not suggest that any of these layers is a “planarization layer.” Layers 14, 15, 17, 18, and 20 are all formed upon a flat surface in the figures cited by the Examiner. Thus, none of these layers is positioned over topography that could be planarized, and the fact that these layers may appear planar in Figs. 1-4 does not indicate that any of these layers is a “planarization layer” in the normal sense of the term, i.e., a planar layer deposited over a non-planar layer. Thus, Appellants reiterate that layers 14, 15, 17, 18, and 20 are not planarization layers for the reasons listed in the Response, *inter alia*. *See id.*

Appellants also explained in the Response that, in addition to not teaching the “planarization layer” of claims 19 and 33, the Woo reference does not teach a “flowable layer,”

as recited by claim 26. *See* the Response, pages 11-12. In the Final Office Action, the Examiner argues that “because the first and second layers are made of the same materials as those of the Applicant’s invention, it appears that the layers of Woo would inherently possess the function of being flowable.” Final Office Action, page 4.

However, Appellants stress that the cited layers are not inherently flowable. The fact that a certain result or characteristic *may* occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). As explained on page 12 of the Response, a layer is not flowable merely because it contains certain materials. *See e.g.* Stanley Wolf & Richard N. Tauber, *Silicon Processing for the VLSI Era Volume 1: Process Technology* 200 (Lattice Press 2000) (explaining that the capacity of borophosphosilicate glass to flow at a given temperature is a function of the *concentration* of boron and phosphorous in the glass); and *Id.* at 737 (indicating that *film thickness* governs the capacity of resist to planarize, i.e. flow from high points to low points). Notably, factors other than the mere presence of certain materials in a layer significantly contribute to the capacity of a layer to flow. Thus, contrary to the Examiner’s assertion, the layers taught by the Woo reference are not inherently flowable.

Finally, the Woo reference does not teach the combination of layers recited by independent claims 19, 26 or 33. The Woo reference depicts a film stack in Figure 1 and lists a large number of candidate materials for each layer in the film stack in columns 3 and 4. However, the Woo reference absolutely fails to disclose how to select among these candidate materials to produce the combination of layers recited by the present claims. For example, claim 19 recites a barrier film that “does not reflow at the first or second reflow temperatures” of the single first planarization layer and the single second planarization layer. In sharp contrast, the Woo reference does not teach how to combine the candidate materials listed for each layer in Figure 1 to produce such a relationship between the reflow temperatures of a barrier layer and planarization layers. Therefore, due to this lack of guidance as to how to select among the candidate materials for each layer, the Woo reference does not teach the combination of layers recited by claims 19, 26 or 33. Thus, for this reason also, the Woo reference cannot anticipate

independent claims 19, 26 or 33. Further, Appellants note that the Examiner did not address this missing feature in the Final Office Action.

For these reasons, Applicants respectfully requests withdrawal of the rejections under 35 U.S.C. § 102.

Rejections under 35. U.S.C. § 103

The Examiner rejected claims 39-42 under 35 U.S.C. § 103 as being rendered obvious by Woo in view of Cheung et al. (U.S. Patent No. 4,693,925, hereinafter “Cheung”). Appellants respectfully traverse this rejection.


The Woo reference and the Cheung reference, taken alone or in combination, fail to teach or suggest all the features of independent claim 39. For instance, the cited references do not disclose a first layer “in a reflow state,” as recited by claim 39. In contrast, the Woo reference does not disclose any layers in a reflow state, and the cited portion of the Cheung reference teaches a heat pulse of 600°C to 800°C for 10 to 20 seconds. The Chueng reference teaches that this heat pulse permits a “reaction to occur forming the metal silicide,” and not that any layer is in a reflow state. See Chueng, col. 3, ll. 45-50. In fact, the Examiner did not identify any layer in a reflow state in the Final Office Action. Thus, Appellants respectfully request withdrawal of this rejection and allowance of claim 39 and the claims that depend therefrom.

Conclusion

For at least the reasons set forth above, Appellants respectfully request withdrawal of the foregoing rejections. Accordingly, Appellants request allowance of all pending claims.

Respectfully submitted,

Date: June 19, 2006



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